# Phasedown of Ground-Based Aeronautical Navaids

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**March 28, 2000**

# Transition to SatNav

- **FAA plans to transition National Airspace System (NAS)**
  - **primary service provided by SatNav (GPS/WAAS/LAAS)**
  - **ground-based service reduced to match reduced need**
  - **retain some navaids for users choosing to retain conventional avionics**
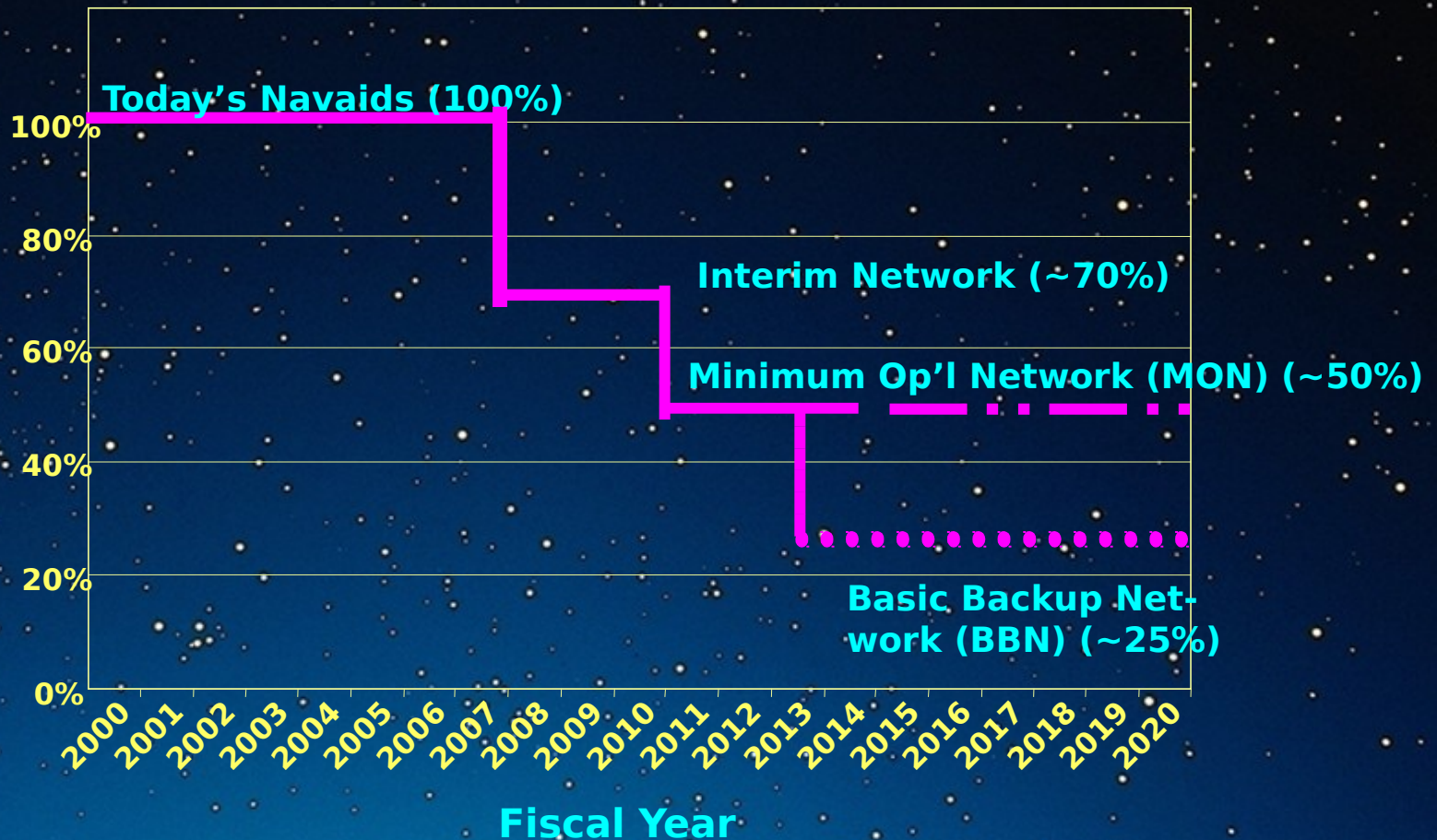
# Planned Navaid Phasedown

- **Prerequisites to phasedown**
  - SatNav system performance attained
  - procedures published
  - users equipped
- **Reduce navaids in gradual steps**
  - prevents major disruption to the NAS
  - provides users time to equip

# Proposed Phasedown



Today's Navaids (100%)

Interim Network (~70%)

Minimum Op'l Network (MON) (~50%)

Basic Backup Network (BBN) (~25%)

100%
80%
60%
40%
20%
0%

2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020

**Fiscal Year**

# Navaid Discontinuance Criteria

- **Phasedown will be based on user equipage**
- **Site-specific lists will be based on benefit vs. cost of keeping a navaid operating**
- **Remaining navaids (MON) will provide a robust operational capability**
  - **some loss of service to users not yet equipped with SatNav**

# VOR/DME Phasedown

- **Will be based on user need for en route and nonprecision approach (NPA) service**
  - **factors will include user equipage, weather, and VOR/DME usage level**

- **Planned to begin in 2008**
  - **dependent on WAAS capabilities**

# TACAN Phasedown

- **Planned to begin in 2008**
- **Will be based on DOD's requirements**
  - **needs close coordination between FAA and DOD**

# ILS Phasedown

- **CAT I - planned to begin in 2008**
- **CAT II/III - not before 2015**
- **Will be based on benefit/cost criteria**
  - **factors will include weather, user equipage, and airport operations**

# MLS Phasedown

- **Can begin when equivalent SatNav procedures are in place and key users are suitably equipped**
- **Planned to begin in 2008**

# NDB Phase-Out

- **NDB's serve two principal functions**
  - **standalone NPA at small airports**
  - **compass locators (LOM's) for ILS**
- **Phase-out of standalone systems planned to begin in 2008**
- **NDB's needed as LOM's will be kept until underlying ILS's are withdrawn**
- **Separate plan may be needed for Alaska**

# Loran-C

- **Operation will continue in short term**
- **Approved for supplemental en route navigation**
  - **current receivers don't support instrument approach (NPA) operations**

# Phasedown Summary

**Through 2007**

**100%**

**~70%**

**~50%**

**~25%**

**0%**

### Current Network

~1050 VOR/DME's, 1050 ILS's, & 750 NDB's support en route flight & instrument ops at ~3500 IFR airports

### Interim Network

Proposed first step in the phase-down to a Minimum Operational Network. Reduces No. of VOR/DME's & ILS's by about 30%. Most NDB's are retained to support ILS.

### Minimum Operational Network

Retains the higher-activity ground-based Navaids to support en route navigation & instrument operations at the busier airports in the NAS. ~600 VOR/DME's, 500 ILS's, & 280 NDB's. ~2400 IFR airports supported by VOR's.

### Basic Backup Network

Several hundred VOR/DMEs support radionavigation updates of DME/DME & inertial-equipped aircraft and single-Navaid en route navigation, precision & nonprecision approach at busiest airports in case of SatNav disruption. Some Category I ILS's & all(~100) Category II/III ILS's retained at major airports.

**Phase I 2008-2010**

**Phase II 2011-2012**

**Phase III 2013 & on**